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DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

Soviet Manpower Prospects For The 1970s

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
November 1970

INTELLIGENCE MEMORANDUM

Soviet Manpower Prospects For The 1970s

Introduction

The Soviet Union has not published data on the expected growth of the labor force during the 1970s, but increasingly Soviet economists are expressing concern that a current nationwide manpower shortage will continue.* They fear that inadequate supplies of manpower in the future may cramp economic growth. Western projections of USSR manpower indicate that increments to the total population and to the adult population will be smaller between 1970 and 1980 than during the preceding decade, but, in contrast, additions to the labor supply (persons 14 years and older minus full-time students) and to the labor force will be larger (see the chart).** Despite

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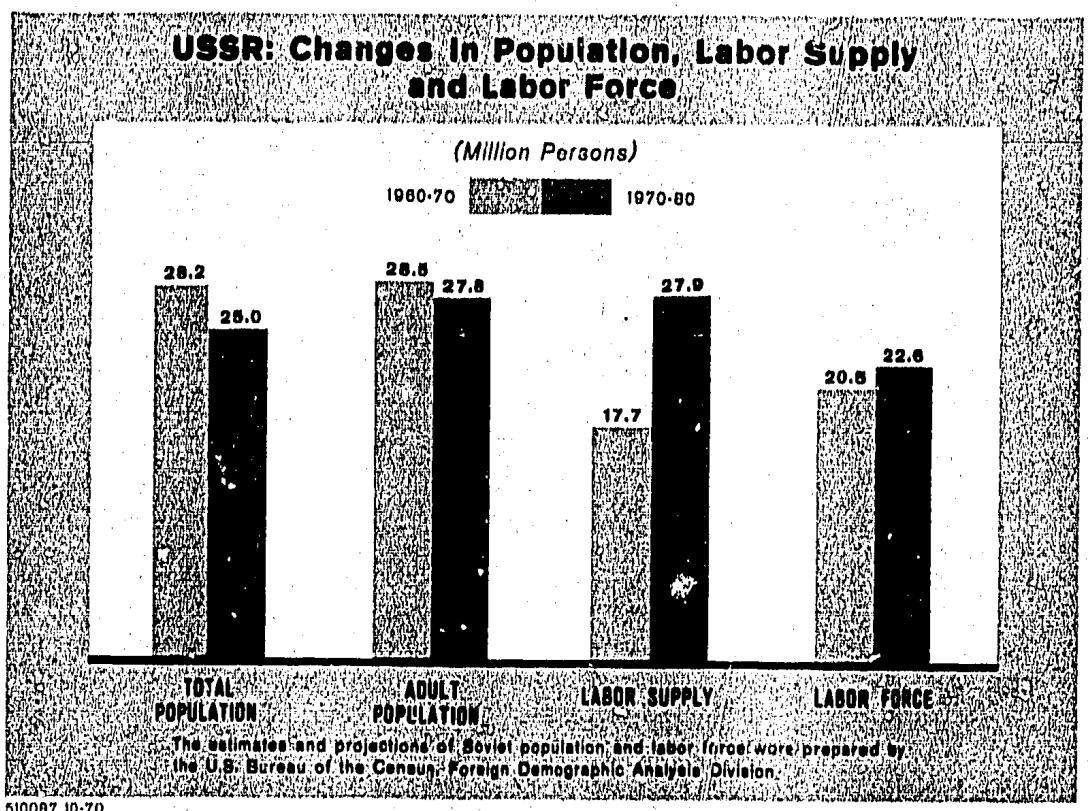
* *A manpower shortage is defined by Soviet economists as the difference between the total number of workers called for in the plan and the number of workers actually employed.*

** *Definitions of terms used in this memorandum are as follows:* adult population *includes all persons 14 years of age and older;* labor supply *is the adult population exclusive of full-time students; and* labor force *is the employed portion of the labor supply, including the armed forces as well as the civilian labor force. For a description of the methodology used in estimating and projecting the labor supply and the labor force during 1960-80, see the Appendix.*

Note: This memorandum was produced solely by CIA. It was prepared by the Office of Economic Research and was coordinated with the Office of Strategic Research.



the slightly larger absolute increase in the size of the labor force in the 1970s, however, the percentage growth will be smaller than in the 1960s. Between 1960 and 1970, the labor force grew at an average annual rate of 1.7%, while GNP rose at an average rate of approximately 5%. In the 1970s, the labor force is projected to grow at most by about 1.6% a year, perhaps considerably slower. More importantly, the nonagricultural labor force is projected to grow at an average annual rate of only 2.8% during the 1970s, compared with 3.5% during the 1960s. Hence, Soviet concern over whether future supplies of manpower will be adequate to maintain a high rate of economic growth may be well founded.

After reviewing the major changes in the size and composition of the Soviet population, labor supply, and labor force during the 1960s, this memorandum presents projections of the trends in manpower availability and the composition of the labor force for the 1970s and discusses some of the implications of these trends for future economic growth.

Trends in the Labor Supply and the Labor Force, 1960-70

Population and Labor Supply

1. Between July 1965 and July 1970, the total population of the USSR increased approximately 12 million, less than the 16½ million that occurred during the first half of the 1960s. The labor supply, however, increased by more than 12½ million during 1966-70, compared with only 5 million during 1961-65 (see Table 1).

2. The slowdown in population growth was caused by sharply diminished birth rates in recent years and slightly higher death rates. The birth rate fell sharply from 24.9 per thousand persons in 1960 to 17.3 per thousand in 1968. This decline was caused both by the decrease in the number of women in the prime child-bearing ages (20 to 34 years) as a result of the low birth rates during World War II and by a decrease in the average number of children per family. The increase in the death rate, from 7.1 per thousand persons in 1960 to 7.7 per thousand in 1968, reflects the gradual "aging" of the Soviet population. In other words, a larger proportion of the population was in the upper age groups where death rates are higher. As a consequence of the diverging trends in the birth and death rates, the rate of natural increase (the net addition to the population) is now only about half the rate in 1960, 9.6 per thousand persons compared to 17.8.

3. Several factors are responsible for the larger increment to the labor supply in the last half of the 1960s than in the first half. Again, because of World War II, fewer persons were reaching working age in the early 1960s. In 1962, for example, there were only 72% as many youths 15 to 19 years of age as in 1959. By 1970, the number of persons 15 to 19 had grown to 87% above the 1962 level, reflecting the effects of the post-war baby boom. Moreover, reforms in education cut the number of youths available for work in the early part of the decade and increased the supply of youths in the late 1960s. The conversion of the elementary and secondary schools from a ten-year system to an eleven-year system in 1959 delayed

Table 1

USSR: Trends in Population and Labor Force a/
1960-70

Million Persons, Midyear

Category	1960	1965	1970	Absolute Change 1961-65	Absolute Change 1966-70
Total population	214.2	230.6	242.5	16.4	11.9
Of which:					
Population 14 years of age and older	151.3	164.7	179.8	13.4	15.1
Full-time students	9.5	17.9	20.3	8.4	2.3
Labor supply b/	141.8	146.8	159.5	5.0	12.7
Labor force	108.6	119.9	129.1	11.3	9.2
Armed forces	3.3	3.2	3.3	-0.1	0.1
Civilian labor force	105.3	116.8	125.8	11.5	9.0

a. Data are from Table 6. Because of rounding, components may not add to the totals shown.
b. Population 14 years and older, minus full-time students.

the entry of teenagers into the labor supply. At the same time, the Soviet Union embarked on a campaign to increase the share of youths that continued their education beyond the elementary grades. During 1961-65 the number of full-time students nearly doubled -- from 9.5 million to 17.9 million -- with most of the growth occurring in general schools.*

4. In the latter half of the 1960s, the number of full-time students increased by only 2.3 million, despite a rise of 9.4 million in the student-age population (14 to 24). A cut in the length of the general education system from 11 to 10 years beginning in 1966 resulted in two graduating classes in June 1966 -- from the phased out 11th grade and simultaneously from the 10th grade. Each of the classes graduated about 1.3 million and approximately doubled the number of students entering the labor supply that year. A slowdown in the rate of growth of enrollments at full-time specialized secondary schools (*tekhnikums***) and higher educational institutions (*vysheye uchebnoye zavedeniya* -- VUZs***) also contribu ed to the overall slower rate of growth in the number of full-time students in recent years. During 1966-70, enrollments at these schools rose by 45%, compared with 52% during 1961-65.

Total Labor Force and Civilian Labor Force

5. The relatively slow growth of the labor supply between 1960 and 1965 did not retard the growth of the labor force. During this period, the total labor force increased by 11.3 million,

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* *Grades 7 through 11 only. Students in grades 1 through 6 of the full-time general schools are assumed to be less than 14 years of age.*

** Tekhnikums *are primarily designed to train semi-professional technicians as assistants to more highly trained graduates of higher education institutions. In addition, they train for such professions as dentistry, nursing, and teaching (mainly for elementary schools). Graduates of* tekhnikums *have completed from one to three years of schooling beyond the high school level.*

*** *The VUZs include "universities" and "institutes." Graduates have completed from four to six years of schooling beyond the high school level.*

compared with an increase of 9.2 million between 1965 and 1970. The average annual rate of growth of the labor force declined from 2% during the first half of the decade to 1.5% during the latter half. The increase during the earlier period was made possible by the rising participation of both males and females in the labor force. For example, the proportion of males 20-29 years of age in the labor force increased from 91.0% in 1959 to an estimated 95.6% in 1965 and the employed proportion of females in this age group from 80.4% to 86.1%. Except for teenagers, the participation rates of all adult age groups are estimated to have increased during 1961-65. Participation rates among teenagers 14-19 years of age fell during this period because a larger share of youths attended full-time schools. Since 1965, participation rates by age and sex are believed to have remained nearly constant, but overall participation of the adult population in the labor force has declined slightly because a smaller proportion of persons are in the age groups where participation rates are the highest -- 20 to 49 years of age.

6. The general rise in participation rates in the early 1960s was the result of a labor policy employing both coercion and incentives to get nonworking adults into the labor force. During 1958-61, various republics passed so-called "antiparasite" laws, which subjected nonworking adults to compulsory labor and exile. Under these laws, youths who dropped out of school and failed to go to work, as well as persons engaged in illegal private activities, were coerced into "socially useful labor" in state-owned enterprises or on collective farms. The antiparasite laws were modified during 1965-67, narrowing the concept of parasitism and abolishing drumhead proceedings by extralegal commissions.

7. Authorities sought also to facilitate employment of housewives by expanding child-care facilities -- the number of places in state-run nurseries and kindergartens rose from 3.1 million in 1960 to 6.2 million in 1965. During the same period, the total number of pre-school age children declined from 34 million to 33 million. Consequently, the proportion of children cared for by state-run institutions rose from 9% in 1960 to almost 19% in 1965.

8. Furthermore, the USSR tried to match jobs and workers by alleviating the unfavorable employment situation in small towns. Participation rates for household members (other than the head of the household) have been lower in small urban areas than in large industrial centers. Employment opportunities for wives and other adult family members may be nonexistent in towns where, for example, industrial activity is limited to the operation of one or two plants. As a result, Soviet authorities have tried to broaden employment opportunities for smalltown households by prohibiting new industrial investment in specified large cities and deliberately locating new factories in urban areas with a narrow industrial base. The partial carrying out of this policy in the 1960s has tended to boost adult participation rates.*

9. Labor force participation rates are not believed to have increased during the latter half of the 1960s. By 1965 they had reached levels, except for youths, beyond which expansion was nearly impossible. Moreover, some labor policies of the regime may have begun to have a negative impact on participation rates. For example, beginning in the mid-1950s the regime introduced a series of welfare reforms that expanded the number of workers eligible for retirement pensions and increased the size of the benefits. These reforms culminated in 1964 with the approval by the Supreme Soviet of a welfare program that placed 25 to 30 million collective farmers and their families under a state social insurance system beginning in 1965. Until this program, the establishment of pension programs at collective farms had been optional and entirely at the expense of the individual farm. As a result, until 1965 many farms had no program at all, and those with a program usually failed to match the benefits received by workers at state enterprises.

10. The expanded welfare system has permitted many persons to retire from the labor force who would not otherwise be able to do so. During 1966-69 the total number of pensioners increased

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* *Despite the prohibition, complaints about the continued concentration of investment frequently appear in the Soviet press.*

from 26 million to 39 million, or at more than twice the annual rate recorded during 1961-65. The law in effect during the late 1960s granted working pensioners employed in various urban occupations only half their pensions (75% if employed in the Urals, Siberia, or the Far East) regardless of earnings, while those employed in agriculture and mining received their entire pension. In 1967, 1.5 million persons, or 15% of all old age pensioners, received retirement pensions while continuing to work in state enterprises. In contrast, in 1956, 60% of all pensioners worked.

Structure of the Civilian Labor Force

11. The share of civilian labor force engaged in agriculture declined from 42% in 1960 to 32% in 1970 (see Table 2). During 1961-65, an average of one million persons annually moved to the cities from the countryside, spurring the growth in the nonagricultural labor force. Since the mid-1960s, the rural-urban migration has slowed to a trickle; the slowdown was attributable, [redacted] to the rapid increase in rural incomes in recent years. Offsetting somewhat the migration patterns of the 1960s was the trend in the number of self-employed and unpaid family members working on private plots. Employment in this sector of agriculture reflected the changing policy of the regime toward private farming during the decade, increasing in the early 1960s as restrictions were eased, decreasing in the late 1960s as restrictions were tightened. Nevertheless, throughout the 1960s the total agricultural labor force declined slowly, following the general trend since 1950. 25X1 25X1

12. A second structural change occurring in the civilian labor force has been an increase in the number of workers in the services sector as a proportion of the nonagricultural labor force, from 33% in 1960 to 37% in 1970.* The 60% rise in employment in the services sector was about half again as large as the growth in the industrial work force during this period. The Soviet

* *The services sector includes education, health, housing, communal economy, trade and dining, banking and insurance, government administration, and science.*

Table 2

USSR: Trends in the Civilian Labor Force
by Class of Worker and by Branch of the Economy a/
1960-70

Million Persons, Midyear

Category	1960	1965	1970	Absolute Change 1961-65	Absolute Change 1966-70
Total civilian labor force	*105.3*	*116.8*	*125.8*	*11.5*	*9.0*
By class of worker					
Workers in the social economy b/	97.4	107.9	118.5	10.5	10.6
Self-employed and unpaid family workers	8.0	8.9	7.3	0.9	-1.6
By sector of the economy					
Agricultural sector	44.6	43.1	39.7	-1.5	-3.4
Nonagricultural sector	60.8	73.7	86.1	12.9	12.4
Industry	22.6	27.4	31.4	4.8	4.0
Services	20.1	26.4	32.1	6.3	5.7
Other c/	18.0	19.9	22.6	1.9	2.7

a. Because of rounding, components may not add to the totals shown.
b. Including wage and salary workers in state enterprises and workers on collective farms.
c. Including forestry, transportation, communications, and construction.

Union has apparently reached that frequently observed state of development where the pace of expansion of employment in industry slows while the rate of employment growth in tertiary activities accelerates. Considered as "unproductive" by Soviet planners, the USSR's services sector was given generally the lowest priority until recently. As a result, while the urban population increased by 65% between 1940 and 1960, the number of persons employed in domestic trade activities in urban areas rose by only 60%. Between 1960 and 1966, however, employment in urban domestic trade increased by 39% while the urban population grew by 20%. Since 1960, planners have come to realize that the inefficiencies in the distribution system had an adverse effect on the labor force. The hours required each day for the average Soviet family to provide its household needs causes absenteeism and lower productivity and forced some housewives to stay out of the labor force.

Prospects for the 1970s

13. The Soviet Union enters the 1970s with a rising concern about its manpower prospects. Shortages of skilled workers and labor in large cities have been longstanding features of the Soviet labor scene. Beginning in 1967, however, articles appeared in the press concerning a general, nationwide manpower shortage. After exceeding plans for the labor force annually since 1950, there was a shortfall in the manpower plan for industry in 1966. In 1967, only three-fourths of the plan was met for additional wage and salary workers, and planners revised downward the manpower goals for 1970 established in the five-year plan (1966-70). Recent articles suggest that there was no easing of the tight labor market during 1969 and 1970. The chairman of the RSFSR Committee for the Utilization of Labor Resources, K. Novikov, attributed the labor shortage to the following factors:

An insufficient rate of growth in labor productivity;

An inability to raise participation rates from their already high levels;

A reduction in the rural-urban migration;

An excessive concentration of industry in large cities;

An increasing delay in young people joining the labor force because of longer schooling; and

A misallocation and a misuse of existing labor.

14. The current situation of a generally tight labor market is likely to prevail in the foreseeable future. Despite the prospects of several unfavorable manpower trends in the 1970s, however, the evidence does not suggest that Soviet leaders are facing a massive or irreversible manpower shortage. Moreover, the present enormous inefficiency in the use of labor, as evidenced by the fact that the labor force in the USSR is half again as large as that in the United States but is able to produce only about one-half the amount of goods and services, provides vast opportunities to improve the productivity of the existing labor. Partial success in making use of such opportunities for labor saving would tend to offset, at least in part, the effects of the adverse manpower trends described below. However, past efforts to improve the efficiency of labor through administrative reform and improved incentives generally have been half measures at best, failing to attack central problems.

15. Projections of the Soviet labor force for 1971-80 were constructed by applying labor force participation rates by age and sex to estimates and projections of the adult population. It is assumed that all persons 14 to 24 years of age not in the labor force will be attending schools on a full-time basis. To the extent that some youths 14 to 24 will be neither in the labor force nor attending school on a full-time basis, the estimates of full-time students are overstated. The projections of the civilian labor force assume that the size of the armed forces will be the same in 1980 as in 1969 and the projection of the

agricultural labor force is based on the trends of agricultural employment during the period 1959-67. The nonagricultural labor force is derived as a residual -- total civilian labor force minus the agricultural labor force.

Population and Labor Supply

16. During the 1970s the total population of the USSR is projected to increase by 25 million, or at about 1% a year (see Table 3) -- the same rate that was recorded during the last half of the 1960s. Increments to the adult population during the 1970s will be affected increasingly by the sharp decline in the birth rate in the 1960s. Between 1970 and 1975, the adult population will grow by about 16 million, compared with 12 million during 1976-80. The teenage segment (14 to 19 years) of the total adult population will decline from about 15% in 1970 to less than 13% in 1980. Growth in the labor supply -- the source of labor force growth -- will be determined not only by demographic changes but also by the regime's policy toward education.

17. Education goals for the 1970s have not been announced, and the past history of sharp swings in policy -- from rapid expansion in the early 1960s to slow growth in the late 1960s -- makes predicting the future policy hazardous. If a policy is followed of expanding full-time education, it will tend to restrict the growth of the labor force by holding more youths in school. For example, if a policy prevails for providing universal, full-time education to youths 7 to 18 years of age and for expanding higher and secondary specialized education at the rate recorded during the 1960s, the number of students would increase by more than half by 1980 while the resulting dearth of young workers would restrict the growth of the labor force to less than 1% a year, or to about half the rate attained in the 1960s. These results suggest that Soviet leaders would find this to be an unacceptable policy.

18. On the other hand, Soviet authorities could follow a "neutral" policy toward education, holding labor force participation rates of youths at current levels and allowing enrollment in full-time education to fluctuate according to the

Table 3

USSR: Trends in Population and Labor Force a/
1970-80

Category	Million Persons, Midyear			Absolute Change	
	1970	1975	1980	1971-75	1976-80
Total population	242.5	254.6	267.5	12.1	12.9
Of which:					
Population 14 years of age and older	179.8	195.6	207.6	15.8	12.0
Full-time students	20.3	21.9	20.2	1.6	-1.7
Labor supply	159.5	173.7	187.4	14.2	13.7
Labor force	129.1	140.6	151.7	11.5	11.0
Armed forces	3.3	3.3	3.3	0	0
Civilian labor force	125.8	137.3	148.4	11.5	11.0

a. Data are from Table 6. Because of rounding, components may not add to the totals shown.

number of youths. This would result in an increase in the number of students during 1971-76, but a slight decline would occur thereafter. More importantly, this policy would not substantially depress the rate of growth of the labor force during the 1970s. Consequently, for projection purposes, it is assumed that the USSR will follow the latter policy -- that labor force participation rates among school-age youths (14 to 24) will remain constant. However, it should be stressed that the growth rate of the projected labor force would be lower to the extent that official policy calls for a continued increase in student enrollments in the latter half of the decade. In this sense, the projected rate set forth below can be viewed as an upper limit, with the possibility that actual employment will grow somewhat more slowly.

Total Labor Force and Civilian Labor Force

19. The total labor force and civilian labor force are projected to increase by 11.5 million during 1971-75 and by 11.0 million during 1976-80. Thus during the early 1970s the labor force is expected to grow more rapidly than during the late 1960s, but the increments to the labor force will gradually diminish after 1975. Overall, given the assumption concerning the leveling off in student enrollments in 1976 and declines in 1977-80, the average annual rate of growth of the total labor force will be slightly lower during the 1970s than during the 1960s, 1.6% compared with 1.7%.

20. The projected estimates of the labor force for the current decade assume that participation rates remain at the estimated levels for 1970. This assumed stability in participation rates contrasts with the increases that occurred in the 1960s (see Table 4). To continue the upward trend in participation rates, however, the Soviet Union would need to reverse the current education policy that results in low participation rates among the youngest groups of the adult population. A reversal of the education policy seems unlikely.

21. Soviet economists have written of the inability to increase participation rates further.

Indeed, the regime may find it difficult to maintain the current participation rates of women and the elderly. In the past the basic financial needs of the family necessitated employment by its female members. The nearly twofold increase in per capita disposable money income between 1950 and 1969, however, has greatly eased the financial straits of most Soviet families. Similarly, rising family incomes and expanded pension programs have eased the plight of the elderly. As yet, there has been no discernible lessening of labor force participation among these groups. Wider job opportunities (particularly in the services sector), expanded child-care facilities for working mothers, and continuing pressure against nonworking "parasites" may offset any tendency to drop out of the labor market because of higher incomes.

Table 4

USSR: Labor Force Participation Rates by Age and Sex

Percent

Age and Sex	1959	1970-80
Males		
14 and 15 years	13.1	10.0
16 to 19 years	65.9	40.0
20 to 29 years	91.0	95.6
30 to 39 years	95.0	98.0
40 to 49 years	93.0	97.6
50 to 54 years	90.1	94.6
55 to 59 years	83.5	87.7
60 years and over	52.5	57.0
Females		
14 and 15 years	17.1	14.0
16 to 19 years	66.5	42.0
20 to 29 years	80.4	88.0
30 to 39 years	77.7	85.0
40 to 49 years	75.4	82.0
50 to 54 years	67.7	74.0
55 to 59 years	48.5	53.0
60 years and over	33.8	37.0

22. The projection of civilian labor force is based on the assumption that the size of the armed forces will not change. Of course, a reduction in the armed forces would swell the ranks of the civilian labor force and ease the manpower pinch. And under a similar labor shortage in the late 1950s and early 1960s, demobilizations were carried out. However, rising tensions, including the China border problems and the invasion of Czechoslovakia, have caused a gradual expansion of military manpower since 1965. Moreover, the probable continuance into the early 1970s of the pressures that led to the maintenance of the present level of military manpower will preclude a sizable demobilization during at least the first half of the decade.

Structure of the Civilian Labor Force

23. More uncertainty is involved in projecting the structure of the civilian labor force than in estimating the total. The greater uncertainty arises because of the influence of planning decisions on the allocation of labor among the economic sectors and of the current Soviet reticence concerning future goals. Projections by class of worker assume that the trends of the 1960s for collective farmers and self-employed family workers will continue during the 1970s. The increase in the state labor force (wage and salary workers) is derived as a residual -- total civilian labor force minus collective and unpaid family workers.

Nonagricultural Labor Force

24. During the current decade the nonagricultural labor force is projected to increase by approximately one-third, from 86.1 million to 113.6 million (see Table 5). Trends in employment among the sectors of the nonagricultural labor force during the 1970s can only be a matter of conjecture.

25. It is arbitrarily assumed that the industrial labor force will grow at a rate of 2% annually during the 1970s. This rate is lower than the annual average rate of 3.8% recorded during 1961-68 but higher than the rate achieved during 1969-70 when growth averaged less than 2%

Table 5

USSR: Trends in the Civilian Labor Force by Class of Worker and by Branch of the Economy a/ 1970-80

Million Persons, Midyear

Category	1970	1975	1980	Absolute Change 1971-75	Absolute Change 1976-80
Total civilian labor force	*125.8*	*137.3*	*148.4*	*11.5*	*11.0*
By class of worker					
Workers in the social economy b/	118.5	130.5	141.9	12.0	11.4
Self-employed and unpaid family workers	7.3	6.9	6.4	-0.4	-0.5
By sector of the economy					
Agricultural sector	39.7	37.3	34.7	-2.4	-2.6
Nonagricultural sector	86.1	100.1	113.6	14.0	13.5
Industry	31.4	34.7	38.3	3.3	3.6
Other c/	54.7	65.4	75.3	10.7	9.9

a. *Because of rounding, components may not add to the totals shown.*
b. *Including wage and salary workers in state enterprises and workers on collective farms.*
c. *Including forestry, transportation, communications, construction, and services.*

annually. About three-quarters of the increase in the nonagricultural labor force will occur in the nonindustrial sectors. The services sector is likely to be the recipient of the largest number of new workers in the 1970s. If employment in the services sector grows at the same rate as recorded during 1961-68, at least one out of every two workers added during the 1970s to the nonagricultural branches will be added to the services sector.

Agricultural Labor Force

26. The total agricultural labor force is projected to decline by 5 million persons, a drop of about 13% -- from 39.7 million in 1970 to 34.7 million in 1980. In 1980, according to the projections, approximately one worker in four will be employed in agriculture, compared with about one worker in three in 1970.* In contrast, recent projections of the US economy in 1980 indicate that only three workers in 100 will be employed in agriculture. The projection for the Soviet Union implies that during the 1970s, a steady growth will occur in the productivity of the agricultural labor force, but also implies that Soviet agriculture will not achieve a breakthrough sufficient to permit a large-scale shift from agricultural to nonagricultural employment.

27. It is assumed that employment during the current decade in the subsectors of agriculture -- state farms, collective farms, and private plots -- will follow the trends recorded during 1959-67. The labor force on state farms will increase by 17% during the 1970s and account for more than one-third of the total agricultural labor force in 1980 compared with one-fourth in 1970. If past trends continue, the labor force both on collective farms and on private plots will diminish throughout the 1970s. By 1980 the number of workers on collective farms will have declined by more than one-fourth, from 22.2 million in 1970 to 16.4 million in 1980. During the

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same period, labor on private plots will be reduced by about 13% and account for only about 18% of the total agricultural labor force in 1980.

Implications of Manpower Trends for Economic Growth

28. The average annual rate of growth of the nonagricultural labor force during the 1970s is expected to be only four-fifths the average yearly rate achieved during the 1960s, 2.8% and 3.5%, respectively. Such a slowdown could retard the growth of the economy. Several detailed studies of economic growth rates in postwar Europe have postulated that abundant labor is necessary to sustain the growth process. For example, Charles Kindleberger concludes that:

> The major factor shaping the remarkable economic growth which most of Europe has experienced since 1950 has been the availability of a large supply of labor ... . With the exhaustion of Europe's excess supplies of labor, in the early 1960s, the high rates of economic growth of the 1950s are slowing down ... .*

The manpower situation in the Soviet Union has been somewhat analogous to the conditions in Western Europe: labor was in relatively large supply in the 1950s and in increasingly short supply during the 1960s. The lower projected rate of growth in the labor force indicates this stringency in the USSR will probably get a little worse in the 1970s. Moreover, other labor-related factors occurring in the USSR that will tend to depress the economic growth potential of future additions to the labor force include: (1) a slowdown in the rate of growth of capital, (2) a declining rate of growth in employment in sectors with relatively high productivity while employment in sectors with relatively low productivity is accelerating, and (3) a decreasing rate of growth in the quality of the labor force.

* *Charles P. Kindleberger*, Europe's Postwar Growth: The Role of Labor Supply, *Cambridge, Massachusetts, Harvard University Press, 1967, p. 3.*

29. One possible method of countering a slowdown in the growth of the labor force would be to increase the rate of growth of capital. However, the rates of growth of capital stock were lower during the 1960s than during the 1950s, and the rates are not likely to increase during the 1970s. Moreover, a recent study indicates that alternative rates of growth of capital stock make very little difference in the estimated value of output of the Soviet economy by 1980. On the other hand, the same study found that the response of output to a change in the rate of growth of labor inputs is much stronger.* These divergent trends resulted because, during the 1960s, there were diminishing returns to new investment. That is, at the end of the 1960s, a given increment of investment resulted in a smaller addition to output than the same increment made at the beginning of the 1960s. Under these conditions returns to new investment diminish very rapidly when capital stock grows much faster than inputs of labor. This suggests that, in the Soviet growth formula, the growth of labor inputs in the 1970s may be a more critical factor than during the 1960s.

30. Structural shifts in the labor force during the 1970s are also likely to depress the growth rate of the economy. The growth rate of labor productivity in industry traditionally has been much greater than the rates for other sectors of the economy. This meant that the contribution to economic growth of an additional worker in industry was greater than an additional worker employed in any other sector. For years, economic growth was stimulated by the process of expanding the work force most rapidly in sectors with the highest rates of growth of labor productivity. As explained above, however, during the 1960s the structure of the labor force in the USSR began to shift. Additions to the industrial labor force slowed while workers were added to the services sector at an accelerated pace. This trend is expected to continue in the 1970s.

31. Recent projections of the labor force of the United States to 1980 indicate trends analogous

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to those projected for the USSR. One US study estimates that the shift in the structure of the labor force from the producing sectors to the services sectors will cause a slight decline in the average annual growth rate of the economy, from more than 3% a year during the 1960s to 2.8% annually during the 1970s.* The differential in the growth rates of labor productivity between the producing and services sector is narrower in the United States than in the Soviet Union. Thus the impact on the growth rate of the economy of a shift in the structure of the labor force from the high-efficiency producing sectors to the low-efficiency services sectors could be much greater in the Soviet Union than in the United States.

32. A third labor-related factor that may impede the economic growth rate of the USSR in the 1970s is a slowdown in the qualitative improvement of the labor force. This slowdown comes at a time of increasing needs for skilled manpower; transformation to a modern, industrialized economy means that untutored peasants no longer are a source of useful manpower for industry.

33. Education is the most important qualitative factor: it determines both the types of work an individual can do and his efficiency in doing them. Edward Denison has estimated that between 1950 and 1962 the increase in the educational attainment of the labor force contributed about 15% to the economic growth of the United States and approximately 5% to the growth of nine countries in northwestern Europe.** The median years of school completed by the adult population serves as an indicator of the educational attainment of the labor force. According to estimates and projections made by the US Bureau of the Census, between 1960 and 1970 the median years of school attained by the adult population in the Soviet Union rose by almost one-quarter, from 5.9 years to 7.3 years. Between

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* *Gilbert Burck, "There'll Be Less Leisure Than You Think," Fortune, March 1970, p. 88.*

** *Edward F. Denison, Why Growth Rates Differ: Postwar Experience in Nine Western Countries, The Brookings Institution, Washington, D.C., 1967, p. 299-317.*

1970 and 1980, however, the median years of school is projected to grow by about 11%, to 8.1 years.* This suggests that whatever the contribution education made in the past to Soviet economic growth, it was probably more than will be made in the future.

Conclusions

33. During the early 1970s the Soviet labor force is expected to grow more rapidly than during the late 1960s, but increments to the labor force will gradually diminish after 1975. Overall, the average annual rate of growth of the total labor force is expected to be slightly lower during the 1970s than during the 1960s, 1.6% compared with 1.7%. However, the projected growth in the labor force for the 1970s represents an upper limit of expectation; if the regime decides to expand full-time education in the late 1970s the growth rate of the labor force could be reduced by as much as one-half from the projected rate. More importantly, the nonagricultural labor force is projected to grow at an average annual rate of only 2.8% during the 1970s, compared with 3.5% during the 1960s. Thus the tight labor situation experienced in the late 1960s, when the labor force grew at an average annual rate of less than 1.5%, will probably continue to exist during the projection period.

34. Despite far larger increments to the labor supply during 1966-70 and success in maintaining a very high rate of participation in the labor force, complaints were voiced increasingly about a general nationwide labor shortage. In 1967, only three-fourths of the plan was met for additional wage and salary workers, and planners revised downward the manpower goals for 1970 established in the five-year plan (1966-70).

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* *US Bureau of the Census*, Estimates and Projections of Educational Attainment in the USSR: 1950-1985, *Series P-91, No. 16, by Ann S. Goodman and Murray Feshbach, Washington, 1967, p. 17.*

35. Throughout the decade of the 1960s, the Soviet Union continued to evolve from an agricultural to an industrial and service economy. The share of persons employed in nonagricultural pursuits rose from 58% in 1960 to 68% in 1970. In the 1970s, structural changes in the labor force are expected to follow past trends. The nonagricultural labor force will increase by approximately one-third. If employment in the services sector grows at the same rate as recorded during 1961-68, one out of every two workers added during the 1970s to the nonagricultural branches will be added to the services sector. The total agricultural labor force is projected to decline from 39.7 million in 1970 to 34.7 million in 1980, or by about 13%. In 1980, according to the projections, approximately one worker in four will be employed in agriculture, compared with about one worker in three in 1970.

36. Several detailed studies of economic growth rates in postwar Europe have concluded that maintaining high growth rates of the labor force is necessary to sustain rapid economic growth. If this is correct, the slowdown in the average annual rate of growth of the nonagricultural labor force in the USSR during the 1970s compared to the 1960s could retard the growth of the economy. In addition, other labor-related factors are occurring that will tend to depress the economic growth potential of future additions to the labor force including: (1) an increasing capital-output ratio, (2) a declining rate of growth in employment in sectors with relatively high labor productivity (industry) while employment in sectors with relatively low productivity (services) is accelerating, and (3) a decreasing rate of growth in the educational attainment of the labor force.

37. Despite the prospect for several unfavorable manpower trends in the 1970s, the present enormous inefficiency in the use of labor provides vast opportunities to improve the productivity of the existing labor. However, past efforts to improve efficiency and to save labor have been notable for their lack of success. For example, one of the explicit objectives of the economic reforms launched by Kosygin in late 1965 was to

raise efficiency, primarily by revising incentives for enterprise managers to reduce labor and other costs. By all accounts, the new measures have had no such effect thus far, nor are they likely as they now operate to have a significant effect in the future. But as the manpower pinch continues and the pace of economic growth becomes increasingly difficult to maintain, the argument of those Soviet leaders who wish to try further or more drastic reform will be strengthened.

APPENDIX

Methodology

The USSR does not publish, on a regular basis, data that are compatible with the concept of the labor force that is used in this memorandum -- "labor force" as a measure of the "economically active population." Such data have been published only once for a recent date -- 15 January 1959, when a complete census was conducted. Moreover, no data on the number of persons in military service are published on a regular basis.

The Soviet Union regularly publishes annual average employment data that are believed to reflect fairly accurately the number of persons who have worked in state enterprises (wage and salary workers) but, because of the seasonality in employment on collective farms, greatly understate the number of persons actually available for work on farms or for transfer to other branches of the economy. Also, a large number of persons are engaged in private activity. Soviet economists estimate employment in this sector on the basis of man-year equivalents. This is done by applying estimates of input coefficients to reported data on the output from the private sector.

In this memorandum, data from the 1959 census are used in conjunction with other official data to derive the estimates and the projections of the total labor force [redacted] Estimates for 1960-68 of the nonagricultural labor force and the state farm labor force are computed as the sum of the annual average employment in the respective branches and as the absolute difference between the 1959 census labor force in these branches and the average of 1958 and 1959 annual average employment in these categories. The collective farm labor force is derived from the ratio of the 1959 census labor force to the average of the 1958 and 1959 annual average employment on these farms. Estimates of the labor force in the private sector are man-year equivalent figures derived in part from data from the 1959 census on the size of the private sector labor force, in

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part from other official Soviet data on the number of hectares privately cultivated, and, in part, from the output of the private sector. Estimates of the size of the armed forces for 1962-69 are reported by the Institute for Strategic Studies, London, *The Communist Bloc and the Western Alliances: The Military Balance 1962-63*, and subsequent annual issues.

For the period 1969-80 the total labor force was projected by applying estimated labor force participation rates to estimates and projections of the population by age and sex. The components of the labor force were projected as follows:

The armed forces were assumed to remain constant throughout the period.

The agricultural labor force was projected on the basis of the trends in agricultural employment during 1958-67; it was also assumed that the relationships between the 1959 census labor force in agriculture and the average of 1958 and 1959 annual employment in each category of agriculture will remain constant during the projection period.

The nonagricultural labor force was derived as the difference between the total labor force and the agricultural labor force.

The Soviet Union regularly publishes data on the number of full-time students, by type of school. [redacted] No data, however, are published on the number of full-time students by age. In Table 7, official data for 1960-69 are used when available, and, when not, it is assumed that all persons of the appropriate age not in the labor force are attending school on a full-time basis. For example, it is assumed that all 14-year olds that are not in the labor force are attending the 7th grade. 25X1

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